

**Abstract Of The Invention**

A system has a stratospheric platform with a payload controller and a phased array antenna having a plurality of elements. A gateway station communicates with the stratospheric platform. The gateway station scales the plurality of elements to form a reconfigurable plurality of beams. The gateway station communicates a control signal to the stratospheric platform to communicate a scaling of the elements. The stratospheric platform configures the elements of the phased array antenna according to the scaling using adaptive interference rejection. The gateway station has an adaptive beam processor coupled to user position files. The adaptive beam processor with the user position data can adaptively cancel interference from other beams.